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Psychological Correlates of Dogmatism and Heterogeneity of Power in Small Groups

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PSYCHOLOGICAL CORRELATES OF DOGMATISM
AND HETEROGENEITY OF POWER
IN SMALL GROUPS

by

JOEL ROBERT KAPLAN

A DISSERTATION SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
OF LOYOLA UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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LIFE

Joel Robert Kaplan was born on August 14, 1940, in Chicago, Illinois. He attended grade schools in the Chicago area, and in June, 1958, was graduated from New Trier High School in Winnetka, Illinois. He attended the Universtiy of Illinois in Urbana from 1958 to 1960, then transferred to Washington University, St. Louis Missouri, from which he was graduated in June, 1962, with a Bachelor of Arts degree in Psychology. He enrolled in the Graduate School of the University of Wisconsin, Madison, Wisconsin in July, 1962, in the field of Industrial Psychology. While attending this institution, he held a National Institute of Mental Health Fellowship and did research in psycho-pharmacology. In September, 1963, he transferred to the Graduate School of Loyola University, Chicago, Illinois, from which he received a Master of Arts degree in Social-Industrial Psychology in February, 1966. In February, 1970, he received the Doctor of Philosophy degree in Social-Industrial Psychology from the same institution.

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CHAPTER I

Problem

The purpose of this study was to determine the relationship between dogmatism and heterogeneity of power (the independent variables) and the following dependent variables:

(1) morale (or satisfaction), (2) emergent leadership, (3) opinion change, (4) perceived productivity, (5) distribution of participation, (6) power and perceived amount of total communication, and (7) power and perceived influence attempts. These variables were studied in small groups consisting of three to five members.

Interest in dogmatism grew out of studies of the related concept of authoritarianism, which has been investigated by Adorno, Frenkel-Brunswick, Levinson, and Sanford. These writers constructed the California F. Scale to measure authoritarianism. There has been a great deal of criticism of this Scale, largely having to do with the contention that the Scale identifies right-wing but not left-wing authoritarians. Milton Rokeach devised the Dogmatism Scale, which, in the opinion of this writer, does not suffer from some of the limitations of the F Scale. Rokeach, in constructing this Scale, was interested more in the structure than in the content of beliefs. He states: "A person may adhere to Communism, Existentialism, Freudianism, or the 'New

Conservatism' in a relatively open or in a relatively closed manner." (Rokeach, 1960, p. 87) For Rokeach, dogmatism is closed-mindedness, and non-dogmatism is open-mindedness.

Some theoretical statements by Rokeach concerning the nature and meaning of dogmatism are of interest here. Rokeach (1963) states:

. . . we will now define dogmatism as (a) a relatively closed cognitive organization of beliefs and disbeliefs about reality, (b) organized around a central set of beliefs about absolute authority which, in turn, (c) provides a framework for patterns of intolerance and qualified tolerance toward others p. 159 .

Rokeach (1963) further states:

It is widely recognized, however, that authoritarianism is also manifest among radicals, liberals, and middle of the roaders as well as among conservatives and reactionaries. Furthermore, authoritarianism can be recognized as a problem in such areas as science, art, literature, and philosophy, where facism and ethnocentrism are not necessarily the main issues or may even be totally absent as issues . . . dogmatism, which is assumed to involve both authoritarianism and intolerance, need not necessarily take the form of fascist authoritarianism or ethnic intolerance. It is thus seen that the total range of phenomena which may properly be regarded as indicative of authoritarianism is considerably broader than that facet of authoritarianism studied so intensively by the authors of The Authoritarian Personality . . . to a great extent authoritarianism cuts across specific ideological orientations . . . dogmatic authoritarianism may well be observed within the context of any ideological orientation, and in areas of human endeavor relatively removed from the political or religious arena. p. 166 .

Dogmatism is one of the independent variables in this study, the other being heterogeneity of power. This latter variable was manipulated by varying voting power in some groups (heterogeneous groups) but not in others (homogeneous groups). The manipulation of this variable is described in detail in the section on experimental procedure, and little need be said about it here. Suffice it to say that the assumption was made that the greater the number of votes a subject is able to cast, the greater is his power.

Relatively few studies of heterogeneity of power have been conducted. However, there have been a relatively large number of studies dealing with various other types of heterogeneity, e.g., heterogeneity of values, attitudes, interests, personality, intelligence, etc. There have been a number of studies of the effects of varying amounts of power (e.g., the effects of high, medium, and low power), but this is not what is being investigated here, although it is related to it. A number of studies of heterogeneity have compared relatively homogeneous groups with relatively heterogeneous groups. In the present study, absolutely homogeneous groups (absolutely homogeneous only with respect to the variable being studied) were compared with absolutely heterogeneous groups (absolutely heterogeneous only with regard to the variable being studied). In

other words, in the homogeneous groups, there were no differences at all in voting power, whereas in the heterogeneous groups there were no similarities in voting power in the sense that no two members of a group had the same number of votes. By comparing two sets of groups which differed absolutely rather than relatively it was thought that differences in regard to the dependent variables would more readily manifest themselves.

There are, in a sense, two readily discernible types of heterogeneity. One is experimentally, i.e., artificially, created heterogeneity, and the other is the natural type of heterogeneity which is found outside the psychological laboratory, that is to say in "real life." This type of heterogeneity, although found outside the laboratory, may be studied within the laboratory and often is. For example, people are naturally heterogeneous with respect to intelligence, but such heterogeneity can rather easily be studied within the laboratory.

The study of natural heterogeneity has the advantage of dealing with a more "realistic" variable. However, experimentally created heterogeneity is, in its own way, just as real as the natural kind. Collins and Guetzkow (1964) state: "Persons with such experimentally developed power tend to behave in the same way as persons rated high by an observer or peer; so there

is empirical justification for including data from both types of power definition p. 153."

It is the belief of this experimenter that heterogeneity of power in this study, although experimentally created, corresponds to and is similar to naturally occurring types of heterogeneity of power.

The variable of heterogeneity of power has practical significance. Many examples of groups which are heterogeneous in regard to power could be chosen. However, in order not to labor the point, only one example will be given. The interaction of a group of executives composed of members of lower, middle, and top management (heterogeneous power groups) will, in all probability, be considerably different from the interaction of a group of executives composed entirely of members of middle management (homogeneous power group). If these groups have the responsibility of making decisions, the decisions are likely to differ, at least in some cases. Many other examples could be given, but the point should be clear that heterogeneity of power is a variable that occurs in numerous, natural, "real life" situations and which is of considerable practical significance.

The basic design of this study was a 2 X 3 factorial experiment, the results of which were analyzed through use of analysis of variance. It is well known that through analysis of variance interaction effects as well as main effects are able to be

determined. Thus, it was possible to study the interaction between the heterogeneity of power variable and the dogmatism variable, which was of interest because of the strong possibility that reactions to differences in power would be influenced by the degree to which subjects were dogmatic. In other words, the interaction was of interest because the experimenter felt that it was quite conceivable that a relatively dogmatic person, with a typically authoritarian temperament, would react to the power hierarchy which was established in this experiment in a different manner than a relatively nondogmatic person, with a typically democratic temperament, and this study was designed, in part, to determine whether or not such differences would occur.

The dependent variables measure three different dimensions of behavior: (1) subjects' reactions to the group discussion, (2) subjects' perceptions of the group discussion, and (3) subjects' interactions during the group discussion. The experimenter felt that there would be differences in all three of these areas, i.e., that homogeneous subjects would perceive, react, and interact differently from heterogeneous subjects, and that high dogmatism subjects would perceive, react, and interact differently from low dogmatism (or medium dogmatism) subjects. Thus, the dependent variables were designed to measure all three aspects of behavior.

For the purposes of this study, dogmatism may be defined as dogmatism as measured by Rokeach's Dogmatism Scale. Also for the purposes of this study, heterogeneity of power may be defined as heterogeneity of voting power.

CHAPTER II

Review of the Related Literature

A number of studies of dogmatism have made it possible to obtain a fairly good picture of the "dogmatic" as opposed to the "non-dogmatic" individual. It is, however, important to bear in mind the fact that the term "dogmatic" in this context refers only to an arbitrary area on a continuum rather than to a discrete category. This writer has classified the studies on dogmatism which are reviewed in this section into three categories: (1) dogmatism in relation to personality, (2) dogmatism in relation to learning and memory, and (3) dogmatism in relation to cognition. In other words, this writer will attempt to answer the question: How does the "dogmatic" individual differ from the "non-dogmatic" individual as regards certain aspects of personality, learning and memory, and cognition? The three categories overlap to a considerable extent, particularly as regards cognition and personality. The term "personality" refers here mainly to the non-cognitive or dynamic aspects of personality, i.e., to its motivational and affective components.

It is relatively easy to see how dogmatism in relation to personality and cognition are relevant to this study, but dogmatism in relation to learning and memory does not appear to be

particularly relevant, and the question may arise as to why such studies have been included in this review of related literature. The answer is twofold: (1) The writer is interested in constructing a general picture of the dogmatic individual, and such studies, dealing as they do with such a critically important area of human behavior, are necessary for the sake of completeness; and (2) such studies are closely related to personality and cognitive variables, and, in fact, the question often arises whether some types of "dogmatic behavior" are due to learning and memory factors or to personality and cognitive factors. It is frequently very difficult to separate these two sets of factors as they relate to dogmatism.

By determining some of the major characteristics of dogmatism, it will be possible to formulate a number of hypotheses which are susceptible to experimental test.

The first group of studies to be reviewed deals with dogmatism in relation to personality.

In a study by Zagana and Kelly (1966), high dogmatic Ss were compared to low dogmatic Ss on acceptance or rejection of a novel and unorthodox musical-artistic presentation (jazz music accompanied by multi-colored, fast-moving geometric patterns). High dogmatics demonstrated significantly greater dislike for the experience, as shown by rating scale and questionnaire

responses. Art judgment did not differ significantly between the groups.

Roberts and Hermann (1960) compared high and low scoring ss on the Rokeach Dogmatism Scale with respect to anomie and time-perspective. They concluded that high dogmatics tend to have imbalanced rather than future-oriented time perspectives, and because of their greater anomie, are disturbed with regard to the future as well as with regard to the present.

Kemp and Gratton (1961) found that college students who were low in dogmatism had fewer personal problems than did high dogmatic students. They also found that counselling was more effective in reducing the number of such problems in the case of low dogmatic students than in the case of high dogmatic students.

Plant, Telford, and Thomas (1965) investigated personality differences between dogmatic and non-dogmatic groups. In this study a battery of psychological tests, including the Rokeach Dogmatism Scale (D Scale), five scales from the CPI, the Study of Values (AVL), and the SCAT, was given to a large sample of entering junior-college freshmen. In order to study and to describe some of the ways in which highly dogmatic persons differ from non-dogmatic persons, extreme groups on the D Scale were chosen. Comparisons for these extreme groups were made on CPI AVL. and SCAT scores. In addition, the comparisons on the CPI

and AVL were made for samples who had extreme scores on the D Scale but who were matched on aptitude-test score. Nondogmatic males compared with dogmatic males and nondogmatic females compared with dogmatic females were found to differ significantly on each of the five CPI scales. Without exception, the nondogmatic groups had the highest means on the CPI scales. It was concluded that highly dogmatic Ss were psychologically immature, and could be characterized as being impulsive, defensive, and conventional and stereotyped in thinking.

Zagona and Zucher (1964) investigated interaction and role behavior in groups selected from the extremes of the open-closed cognitive continuum. In this study, two experimental groups of 30 each were formed from both ends of a distribution of 517 Dogmatism Scale scores. Each group made up a "conference section" in general psychology, and for a full semester, Es, acting also as section instructors, made systematic observations under normal classroom conditions and conducted small-group experiments with Ss drawn from these sections. In contrast to low-dogmatics, high dogmatics were leader-oriented, inhibited, uncreative, unspontaneous, anxious, demanded structure in problem situations, and readily yielded to challenges from authority figures.

Hallenbeck and Lundstedt (1966) studied the effect of dogmatism on the adjustment to disability of 32 blind men. Denial was considered to be a sign of nonacceptance of the disability, and depression was considered to be a sign of acceptance. Anxiety was hypothesized as the basic factor linking denial and dogmatism. Type of onset, either gradual or sudden, was also correlated with degrees of denial and depression. Rating scales describing denying and depressed behavior and judgment of tape-recorded interviews measured the dependent variables. The findings were: (1) There was an inverse relationship between depression and dogmatism; (2) There was a positive relationship between denial and dogmatism; and (3) The sudden onset condition cancelled out the dogmatism-denial relationship (i.e., only in the case of gradual onset was there a positive correlation of dogmatism and the denial tendency).

The next group of studies has to do with dogmatism in relation to learning and memory.

In a study by Erlich (1961), the effect of degree of dogmatism, as defined by Rokeach, upon learning in a classroom situation was tested on college Ss. It was hypothesized that if dogmatism implied a "closed cognitive structure" this could affect the capacity to learn, independently of academic aptitude. The results confirmed the hypothesis.

Pyron and Kafer (1967) conducted a study of the recall of nonsense and attitudinal rigidity. In this study, 60 Ss first heard 20 complete nonsense sentences read on tape. They then attempted to recall the correct response element of each sentence after hearing only the stimulus element. The sentences were constructed in such a way that response elements were incongruent with stimulus elements. An attempt was made to differentiate 10 interesting from 10 uninteresting nonsense sentences. Recall of both kinds of nonsense was studied in relation to three measures of attitudinal rigidity: The Dogmatism Scale, the Change Inventory, and the original F Scale. Ss who scored low (more open) on dogmatism tended to recall significantly more interesting nonsense sentence elements than Ss who scored high (more closed).

Christensen (1963) conducted a study of dogmatism and learning with a sample of 166 students in an introductory psychology course and found no confirmation of Erlich's (1961) findings that the Dogmatism Scale predicts classroom learning. Christensen, however, found positive support for previous findings of the independence of dogmatism and aptitude.

Working from Rokeach's definition of a closed belief system, Baker (1964) developed a study to examine the relationships of such a system in a setting wherein new materials were to be learned in a social learning and social adjustment setting.

It was hypothesized that there are no differences: (1) in learning of psychological concepts between individuals manifesting open or closed belief systems (i.e., non-dogmatic and dogmatic individuals), and (2) in intelligence between individuals manifesting open or closed belief systems. The first hypothesis was rejected, and the second hypothesis was confirmed.

The next group of studies is concerned with dogmatism in relation to cognition.

Lo Scinto and Hartley (1963) conducted a study having to do with religious affiliation and open-mindedness in binocular resolution. In this study, 20 Ss, 10 Jewish and 10 Catholic, were exposed to a stereoscopic task and a test of open-mindedness. The stereoscopic task involved a series of 22 slides pairing Jewish and Catholic symbols, words and pictures, exposed under conditions of conflict, thus calling for some form of binocular resolution by Ss. The test of open-mindedness was Rokeach's Dogmatism Scale. There was a statistically significant tendency to report seeing material associated with the "other religion."

Long and Ziller (1965) investigated dogmatism in relation to predecisional informational search. In this study, Rokeach's Dogmatism Scale and four decision measures of tendencies to reserve judgement were administered to 72 freshman women. A

significant negative relationship was found between dogmatism and each of the four decision measures. The non-dogmatic individual tended to delay decision and engage in pre-decisional search, to require more time for psychophysical judgements, and to respond "don't know" to statements of opinion under conditions of inadequate information. The authors interpreted dogmatism as a defense mechanism which interferes with processing of pre-decisional information.

Vidulich and Kaiman (1961), using the autokinetic phenomenon, studied the relationship between the status assigned to the source of a communication and the degree of dogmatism of the receivers. It was found that the more dogmatic subjects attached greater importance to the status of the source of the communication than did the less dogmatic subjects.

Rokeach and Vidulich (1960) conducted a study of dogmatism in relation to problem-solving. In this study, the 30 college sophomores who, on the Dogmatism Scale, scored the highest (the closed-minded or dogmatic group) and the 30 who scored the lowest (the open-minded or non-dogmatic group) were selected from a pool of 249 students. Each of these subjects was tested individually on a problem which required that three commonly held beliefs be overcome and be replaced with three new beliefs, which must then be synthesized into a new cognitive

system. As predicted, the open-minded subjects were significantly superior to the closed-minded subjects in mean time required to solve the problem. The superiority of the open-minded subjects was related to their greater ability to synthesize the new beliefs into a new cognitive system, this ability being related to a greater capacity to remember the beliefs, as measured by post-experimental recall tests. This capacity, in turn, appeared to reflect the greater willingness of the open-minded subjects to entertain novel and strange problems. Emotional rejection of the problem was found more frequently among the closed-minded subjects.

Rokeach, Swanson, and Denny (1960) found that closed-minded chess players performed equally as well as open-minded chess players on chess-like problems. However, it was also found that closed-minded non-chess players were inferior to open-minded non-chess players on the same problems.

Leckart and Wagner (1967) conducted a study of stimulus familiarity dogmatism, and the duration of attention. In this study, 38 males and 30 females viewed each of 30 black and white photographs for as long as they wished. Half the photographs were judged by the Es to be unfamiliar to college students; the remaining ones were judged familiar. After the looking task, all Ss completed the Dogmatism Scale. It was hypothesized that the

open-minded Ss would spend more time looking at the novel stimuli than would the closed-minded Ss. The results failed to confirm this hypothesis.

Miller (1965) investigated involvement and dogmatism as inhibitors of attitude change. Attitude change was related to issue involvement, dogmatism, and initial position in a 2 X 2 X 2 factorial design with 5 Ss per cell. Ss were selected from extreme quartiles of 800 high school students pre-tested on both dogmatism and attitude toward fluoridation. Half the Ss were experimentally involved in their position, and the other half were involved in an irrelevant issue. A taped discrepant communication on fluoridation, supposedly an interview with a previous S was presented to all Ss. As predicted, high involvement and dogmatism reduced the communication's persuasiveness, but involvement contributed most of the curtailment. Con Ss who were both dogmatic and relevantly involved gave significantly more boomerang responses.

A study by Costin (1968) found that dogmatic Ss showed no greater resistance to learning general principles of behavior than did non-dogmatic Ss. However, dogmatic Ss were more resistant to changing specific false beliefs about human nature than were non-dogmatic Ss. The author concluded that the results support Rokeach's view that the Dogmatism Scale does measure

general authoritarianism, rather than simple-mindedness and its consequent acquiescence.

It would now be well to consider the hypotheses which are indicated by these studies. On theoretical grounds alone, it would seem reasonable to expect less opinion change among dogmatic persons, for such persons, by definition, adhere strongly to their opinions and are reluctant to change them. However, in addition to these theoretical considerations, a number of the empirical studies which this writer has already reviewed (Rokeach and Vidulich, 1960; Miller, 1965; and Costin, 1968) justify the following hypothesis: The greater an individual's dogmatism, the greater is his resistance to opinion change. Dogmatism in this context refers to dogmatism as measured by Rokeach's Dogmatism Scale.

The Dogmatism Scale is basically a measure of authoritarianism, and authoritarian persons tend to be leader-oriented. This is a well-known fact, although it is brought out in only one of the studies which have been reviewed in this section (Zagona and Zucher, 1964). The following hypothesis can therefore be formulated: The greater the dogmatism of the members of small groups, the greater is the incidence of emergent leadership in those groups. Leadership will emerge in highly dogmatic groups in response to the members' need for such leadership.

The writer would now like to review a number of studies having to do with the effects of homogeneity vs. heterogeneity, especially as regards productivity, morale, and communication.

Exline and Ziller (1959) conducted a study of status congruency and interpersonal conflict in decision-making groups. In this study, 20 groups of three female students were rated with respect to status dimensions of ability and voting power. Status-congruent (homogeneous) groups were found to be more congenial, characterized by less interpersonal conflict, superior in task performance, and characterized by greater discussion agreement than status-incongruent (heterogeneous) groups. Disagreement was not found to be related to status congruency.

Hoffman (1950) conducted a study of homogeneity of member personality and its effect on group problem solving. In this study, the capacity to solve problems was studied in two groups, one composed of Ss with similar personalities (as measured by the Guilford-Zimmerman Temperament Survey), the homogeneous group, and a heterogeneous group. It was found that heterogeneity of personality was associated with high productivity. On the task with purely objective criteria (mined road problem), Hoffman found that heterogeneous groups produced solutions of significantly higher quality. The difference was not significant on the task primarily requiring consensus. The author concluded

that the production of creative solutions to a problem is facilitated by a multiplicity of perceptions. The superiority of heterogeneous groups has been further demonstrated in a second study which used a wider range of tasks (Hoffman and Maier, 1961).

Festinger and Thibaut (1951) present some evidence that perceptions of heterogeneity lead to subgroup formation. They found that (with low pressure toward uniformity) a greater perception of heterogeneous group composition produced a decrease in the tendency to communicate to deviant group members.

Gerard (1953) conducted a study which was concerned with the effects of variations in perceived group homogeneity with respect to task ability and pressures to help achieve a group solution on influence processes. In order to contrast homogeneity with heterogeneity, members of some groups were instructed that all members had equal task skills and members of other groups that there were marked differences in member skills. Within each of these conditions, high and low pressures toward uniformity were applied by informing some but not other groups that they would later have to defend their group opinions. Groups were compared in terms of opinion change and patterns of communication. With respect to number of communications and number of "influence" communications, the data showed little consistent evidence of differences between groups varying in perceived homogeneity of

abilities and pressures toward uniformity. A greater tendency toward the formation of subgroups was found in groups perceived as being heterogeneous.

Schutz (1958) conducted a study having to do with "fundamental interpersonal relations orientations." Schutz distinguished two basic orientations - a power orientation and a personal orientation. By means of attitude scales, Schutz was able to compose groups which were either compatible (homogeneous) or incompatible (heterogeneous) with respect to these fundamental interpersonal orientations. The compatible groups were either power orientated or personal orientated. Incompatible groups were formed with two subgroups, each of which was centered about a "focal person." Both focal persons were relatively high in dominance, but one subgroup leader and his supporting member were low in personalness, and the other subgroup members were high in personalness. In general, Schutz found that incompatible groups perform less effectively. This decrement was most severe for tasks which required the most interaction and agreement and under conditions of high time pressure.

In a study by Cattell, Saunders, and Stice (1953) 80 ten-man groups were tested on a wide variety of tasks. It was found that accuracy of group judgments was higher in groups heterogeneous in the personality traits of surgency, radicalism,

character integration, and adventuresomeness. But in these same groups, heterogeneity in sensitivity, suspiciousness, and aggressiveness resulted in slowness in decision making and a feeling of blockage of goal achievement.

In a study by Carter and Haythorn (1956) creative groups which were homogeneous and heterogeneous in authoritarian attitudes were compared. The homogeneous groups, relative to the heterogeneous groups, were found to be friendlier and to have higher morale. The members of heterogeneous groups, conversely, were observed to exhibit more conflict and competition. A greater tendency toward clique formation was also found in the heterogeneous groups.

The clearest evidence for higher morale in homogeneous groups is found in the studies of Exline and Ziller (1959) and Carter and Haythorn (1956). In addition, the studies by Festinger and Thibaut (1951), and Gerard (1953) found that heterogeneity or perceptions of heterogeneity lead to subgroup formation, which is indicative of lower group cohesiveness and thus of lower morale. The following hypothesis can therefore be formulated: Morale is higher in homogeneous groups than in heterogeneous groups.

As regards homogeneity and productivity, Exline and Ziller (1959) and Schutz (1958) found homogeneous groups to be more productive, whereas Hoffman (1959) and Hoffman and Maier (1961)

found heterogeneous groups to be more productive. Cattell, Saunders, and Stice (1953) found that homogeneity in certain characteristics leads to superior performance, and heterogeneity in other characteristics leads to superior performance. Because of the conflicting and ambiguous findings (or at least the lack of clear-cut findings) in this area, this writer has not formulated a hypothesis concerning actual or perceived productivity in relation to group heterogeneity.

Heterogeneity of power vs. homogeneity of power is, in this study, an absolute type of comparison, for there are no power differences at all within the homogeneous groups. This study is also concerned with relative comparisons between group members with varying amounts of power.

More specifically, this study is concerned, in part, with: (1) dogmatism in relation to the correlation between amount of power and perceived amount of total communication, and (2) dogmatism in relation to the correlation between amount of power and perceived influence attempts. It would, therefore, be well to review a number of studies having to do with amount of power in relation to communication and influence attempts. After these studies are reviewed, consideration will be given to the possible effects of dogmatism upon these relationships.

A number of studies indicate that high power persons communicate more than do low power persons.

Gerard (1957) found that Ss who were given positions of leadership and authority communicated more than did other Ss.

Borgotta (1954) found that Ss who thought they had high power-status (in this case Ss who expected to receive sociometric choices from others) communicated more than persons who thought they had low power-status (in this case Ss who did not expect to receive sociometric choices from others).

Hurwitz, Zander, and Hymovitch (1953) conducted a study in which persons received a pre-conference rating which was completed by two local people qualified to estimate the status accorded these persons by persons in the same profession. It was found that high power Ss, as determined by the pre-conference rating, communicated more than low power Ss.

Lana, Vaughan, and McGinnies (1960) conducted a study of leadership and friendship status as factors in discussion group interaction. In this study, sociometric choices on friendship and leadership criteria were made on members of two community groups who engaged in three discussion sessions concerning mental health films. Indices of friendship and leadership status were obtained from these groups and related to an index of verbal activity, labeled interaction status. Leadership status and

interaction status were highly correlated, as were leadership status and friendship status. Friendship status and interaction status, however, were not correlated. Those discussion participants who were relatively low in leadership status directed their comments to those members whom they identified as leaders. It was concluded that friendship status does not influence an individual's interaction status with the small discussion group. It was further concluded that discussion of a communication in the small group situation is largely confined to the perceived leaders of the group.

Mussen and Porter (1959) found that subjects rated effective by their peers after a brief leaderless discussion were characterized by a high frequency of participation.

In an experiment where the only communication was through written letters, Shaw and Gilchrist (1956) found a correlation between number of letters written and leadership rankings.

Bates (1952) conducted a study of some sociometric aspects of social rankings in a small, face-to-face group. By means of questionnaires, tape recordings, and observation, two hypotheses were tested. The conclusion was that the greater the conformity of an individual to group norms, the higher will be his social rank. The other hypothesis concerning the origination of action for others did not lead to definite conclusions. However, Bates

found a correlation of .85 between the amount of communications sent and sociometric ranking on who "contributed the most to carrying out the assigned task of the group." Borgotta and Bales (1956) found a correlation of .50 between similar measures.

It would now be well to consider a number of studies having to do with the relationship between amount of power and influence attempts.

Levinger (1959) found that high power subjects initiated more influence attempts than low power subjects. Three separate measures of power were used in this study. Subjects who were told that they were more competent than their partners, subjects whose partner was more accepting of their suggestions, and subjects who had high perceived power were rated by observers as making more influence attempts and having a higher degree of assertiveness than other subjects.

Lippitt et al. (1952) found that persons who were considered by their peers to possess high power initiated more influence attempts than other persons, and a higher proportion of their influence attempts were successful, as compared to the influence attempts of persons who were considered by their peers to possess low power.

French and Snyder (1959) conducted a study in which influence was measured by post-experimental questionnaires. It was

found that high power non-commissioned officers (in this case, more well-liked officers) were more influential than low power non-commissioned officers.

It is clear from the preceding studies that high power persons communicate more than low power persons. This statement is supported by the following studies: Gerard (1957), Borgotta (1954), Hurwitz, Zander and Hymovitch (1953), Lana, Vaughan, and McGinnies (1960), Mussen and Porter (1959), Shaw and Gilchrist (1956), Bates (1952), and Borgotta and Bales (1956). This writer would therefore expect a rather high positive correlation between amount of power and amount of communication. However, this study is investigating the perceived amount of communication in relation to amount of power rather than the actual amount of communication in relation to amount of power. (In order to avoid confusion, it should be pointed out that this study uses two separate and distinct measures of communication. One of these measures, the perceived amount of communication, and this measure is being discussed here. The other measure of communication measures the actual amount of communication in order to determine the distribution of participation in the various groups. This latter measure of communication, however, has nothing to do with amount of power and is not being discussed here. In other words, it is the subjective rather than the objective measure of communication which is being discussed here.)

This writer believes that there is a close but not necessarily perfect correspondence between actual and perceived amounts of communication, i.e., he believes that the subjects' perceptions are, in this case, relatively accurate. If this is true, then it would be expected that there would be a fairly high positive correlation between amount of power and perceived amount of total communication. What is of interest here, however, is the effect of dogmatism upon this relationship, and in this writer's opinion, there is not sufficient empirical evidence to warrant the formulation of a hypothesis concerning such an effect.

Levinger (1959) found that high power subjects initiated more influence attempts than low power subjects; Lippitt et. al. (1952) found that subjects who were perceived as possessing high power initiated more influence attempts than others; and French and Snyder (1959) found that high power subjects were more influential than others, possibly due to the initiation of more influence attempts. It would therefore seem reasonable to expect a positive correlation between amount of power and perceived amount of influence attempts, assuming again that the subjects' perceptions are relatively accurate. However, as was the case with the communication variable, there is not sufficient empirical evidence to warrant the formulation of a hypothesis concerning the effect of dogmatism upon this relationship.

CHAPTER III

Method

Subjects

The subjects in this study were 120 male students enrolled in the introductory psychology course at the Lake Shore Campus of Loyola University. The majority were freshmen, although a number were sophomores, juniors, or seniors, and most were 18 or 19 years of age.

The design of this study required preliminary testing in order to classify each potential subject into one of three levels of dogmatism (high, medium, or low). Accordingly, Rokeach's Dogmatism Scale was administered to 258 male students enrolled in the introductory psychology course at Loyola University. One group of subjects (the low dogmatism subjects) was selected from among those students who scored in the lower third on the Dogmatism Scale; a second group of subjects (the medium dogmatism subjects) was selected from among those students who scored in the middle third on the Dogmatism Scale; and a third group of subjects (the high dogmatism subjects) was selected from among those students who scored in the upper third on the Dogmatism Scale. Scores in the lower third ranged from -110 to -21; scores in the middle third ranged from -20 to +1; and scores in the upper third

ranged from +2 to +64. Table I presents the group sizes, means, and standard deviations for the scores obtained by students tested on the Dogmatism Scale for each level of dogmatism and for all levels combined.

The experiment was set up in such a way that it appeared to the subjects to be three separate experiments. Three sign-up folders were used, each of the folders containing an alphabetical list of the students eligible to serve in that particular experimental condition (which was either a high, medium, or low dogmatism condition, although it was, of course, not identified as such to the subjects). From the student's point of view, each list appeared to contain the names of students eligible for a particular experiment rather than a particular experimental condition. The restrictions specified on the sign-up folders were: (1) the student's name must be on the list, and (2) each subject could participate in the experiment only once.

Although, ideally, it would have been desirable, for a number of reasons, to have groups of equal size, it was not possible to accomplish this. It was therefore necessary to use groups of three, four, or five members, a situation which was not ideal but which in no way violated the basic design of this experiment. In a number of cases, fewer than three students signed up and reported to the experimental room for a given

TABLE 1

Means and Standard Deviations for Scores Obtained by
Students Tested on Rokeach's Dogmatism Scale

Group	<u>N</u>	<u>Mean</u>	<u>SD</u>
Low Dogmatism	86	-39.54	15.68
Medium Dogmatism	86	- 9.40	5.52
High Dogmatism	86	15.41	11.58
Total Sample	258	-11.29	28.05

experimental session, and it was not possible to run groups in such cases. A number of students (fewer than 10% of the total) who reported to the experimental room were not eligible to participate in that particular condition, i.e., their names did not appear on the appropriate list. The experimenter was able to identify and eliminate the majority of these students. However, a post-experimental check revealed that two of the 120 subjects who had served in the experiment were not eligible for the particular condition in which they had served.

In summary, the score which a subject received on the Dogmatism Scale determined the condition to which he was assigned (high, medium, or low dogmatism condition), and the particular group in which he served was determined by a process of random selection. In regard to the heterogeneity variable, the assignment of subjects to homogeneous or heterogeneous groups was also determined by a process of random selection.

Table 2 presents the distribution of groups and subjects among the six experimental treatments.

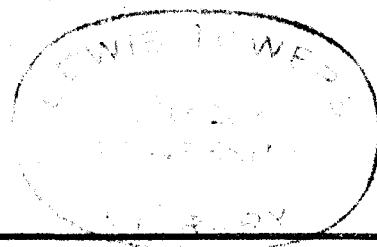
Apparatus

The apparatus used in this experiment was as follows:

- (1) The Dogmatism Scale (used only in preliminary testing), (2) a human relations problem, (3) a tape recorder, (4) sheets containing numbers from one to 300, (5) cards with identifying letters

TABLE 2
Distribution of Groups and Subjects
among Experimental Treatments

Treatments	Groups	Subjects
<u>Heterogeneous</u>		
High Dogmatism	5	21
Medium Dogmatism	5	24
Low Dogmatism	5	16
<u>Homogeneous</u>		
High Dogmatism	5	21
Medium Dogmatism	5	19
Low Dogmatism	5	19
Total	30	120



and votes, and (6) a questionnaire constructed by the experimenter. The Dogmatism Scale is described in the appendix.

The Dogmatism Scale is scored simply by adding up the scores on the individual items to obtain a total score. This score may be either positive or negative. Since each statement is supposedly indicative of dogmatism, the higher the positive score, the greater is the amount of dogmatism, and the higher the negative score, the lower is the amount of dogmatism.

The human relations problem reads as follows:

Sam, a student in the eighth grade, is, in the words of his principal, "A bad case who is headed for the juvenile court." The principal would like to expel Sam, but hesitates to do so because Sam's father is influential in the town. The principal has tried everything with Sam - called him down, pleaded with him, made him sit in the office with his face to the wall, used corporal punishment, called Sam's parents, and placed him on probation. Sam still remains impudent and truant. The principal has written Sam's mother, asking her to come to the school to talk over Sam's behavior, but she phoned to say she is too busy and has no time to bother with his school problems. Sam is at present on probation. What should be done with Sam? The following are suggested solutions:

- A. Send Sam to a psychiatrist, child psychologist, or social welfare counselor.
- B. Try to stimulate Sam toward goals which might gain him greater acceptance.
- C. Try to get his parents to realize the seriousness of the situation.
- D. The whole family should be sent to a psychiatrist, psychologist, or social welfare counselor.
- E. Attempt to determine why he is the way he is, and institute a campaign to correct the reason.

Cards with the letters A, B, C, D, and E were placed in front of subjects in the homogeneous groups for purposes of identification. In the heterogeneous groups, the writing on the cards was as follows: A-1 vote, B-2 votes, C-3 votes, D-4 votes, and E-5 votes.

A tape recorder with a counter was used to record the group discussions.

Sheets containing numbers from 1 to 300 were used during each group discussion to record the interaction of the subjects.

After the group discussion had ended, a questionnaire constructed by the experimenter was administered to the subjects.

The questionnaire was as follows:

Name _____

No. of votes _____

QUESTIONNAIRE

A. Final individual ranking.

Rank the solutions from best (1) to poorest (5). This is an individual ranking rather than a group ranking and is similar to the first ranking, which was completed prior to the discussion. The purpose of this ranking is to determine the effect of the group discussion upon opinions.

Solution

Rank

A

B

Solution

Rank

C
D
E

B. Indicate the degree to which you agree or disagree with the following statements by checking the appropriate space.

1. I was satisfied with the group ranking.

<u>strongly</u> agree	<u>moderately</u> agree	<u>mildly</u> agree	<u>mildly</u> disagree	<u>moderately</u> disagree	<u>strongly</u> disagree
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2. I was satisfied with the group discussion.

<u>strongly</u> disagree	<u>moderately</u> disagree	<u>mildly</u> disagree	<u>mildly</u> agree	<u>moderately</u> agree	<u>strongly</u> agree
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3. The group discussion could be described as friendly.

<u>strongly</u> disagree	<u>moderately</u> disagree	<u>mildly</u> disagree	<u>mildly</u> agree	<u>moderately</u> agree	<u>strongly</u> agree
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4. The group discussion could be described as hostile and antagonistic.

<u>strongly</u> agree	<u>moderately</u> agree	<u>mildly</u> agree	<u>mildly</u> disagree	<u>moderately</u> disagree	<u>strongly</u> disagree
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5. The task bored me.

<u>strongly</u> disagree	<u>moderately</u> disagree	<u>mildly</u> disagree	<u>mildly</u> agree	<u>moderately</u> agree	<u>strongly</u> agree
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6. The task was enjoyable for me.

<u>strongly</u> agree	<u>moderately</u> agree	<u>mildly</u> agree	<u>mildly</u> disagree	<u>moderately</u> disagree	<u>strongly</u> disagree
--------------------------	----------------------------	------------------------	---------------------------	-------------------------------	-----------------------------

7. The task was meaningless insofar as I was concerned.

<u>strongly</u> agree	<u>moderately</u> agree	<u>mildly</u> agree	<u>mildly</u> disagree	<u>moderately</u> disagree	<u>strongly</u> disagree
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C. Was there some individual in the group who could be described as the leader of the group? (a) Yes (b) No. (Circle the letter of the correct answer.)

D. Rate all the members of the group (including yourself) as to their amount of communication (both verbal and nonverbal) by using the following scale.

1. No communication
2. Very small amount of communication
3. Small amount of communication
4. Moderate amount of communication
5. Large amount of communication
6. Very large amount of communication

A _____ B _____ C _____ D _____ E _____

E. How productive, in your opinion, was the group discussion:

(Check the appropriate space.)

extremely productive _____
 generally productive _____
 neither productive nor unproductive _____
 generally unproductive _____
 totally unproductive _____

F. To what extent did each member of the group try to exert pressure to force the other members to accept his solutions?

1. Not at all
2. Slightly
3. Somewhat
4. Quite a bit
5. Extremely

Rate each of the group members (including yourself) using the above scale.

A _____ B _____ C _____ D _____ E _____

It would now be well to consider the scoring procedures for the questionnaire and the measure of the distribution of participation. These procedures have reference only to the raw data; actual statistical procedures are presented in a later section.

In regard to the items measuring morale (the B items), the more a response indicated high morale, the higher the score it received. Each response received a score between one and six. For example, if a subject checked "strongly agree" in response to the statement: "I was satisfied with the group ranking," this response would receive a score of six; the response "strongly disagree" would receive a score of one, and intermediate responses would receive intermediate scores (2, 3, 4, or 5).

For items C (emergent leadership), the number of "yes" responses was tabulated for each group and was divided by the total number of responses to this question in order to obtain a score for each group.

As regards item E (perceived productivity), the response "extremely productive" received a score of five; the response "generally productive" received a score of four; the response "neither productive nor unproductive" received a score of three; the response "generally unproductive" received a score of two; and the response "totally unproductive" received a score of one.

In regard to the measure of the distribution of participation, a count was made of the number of times each subject's letter appeared on the number sheets, thus providing each subject with a raw score on this measure.

Scoring procedures for the other items are virtually self-explanatory. For the measure of opinion change (measured by the initial individual ranking and item A), and for item D (power and perceived amount of total communication) and item F (power and perceived influence attempts), the numbers written by the subjects were the raw scores.

Procedure

Before the experiment could begin, it was necessary to determine whether the particular human relations problem which had been chosen would evoke sufficient variability of responses to permit a meaningful group discussion centered around a meaningful task. If it was found that people tended to agree too much on the ranks of the suggested solutions, the human relations

problem would have to be discarded and replaced with one which was capable of stimulating sufficient controversy among the members of a group. The human relations problem was therefore administered to 62 male and female students enrolled in an undergraduate psychology course at Loyola University. None of these students, it should be pointed out, were eligible to serve in the contemplated experiment.

Table 3 presents the percentages of 41 male students who assigned particular ranks to each of the solutions to the human relations problem. The letters in the vertical column at the extreme left of the Table represent the letters designating each of the solutions. The numbers from one to five at the top of the Table designate the ranks which were assigned to each of the solutions. Table 4 presents, in similar fashion, the distribution of responses for the 21 female students, and Table 5 presents the distribution of responses for the total sample of 62 male and female students. It is apparent from inspection of these Tables that there was sufficient variability of responses to warrant the use of this particular human relations problem.

In this study, there were three levels of the dogmatism factor and two levels of the heterogeneity of power factor. There were, therefore, six treatment combinations: (1) low dogmatism, homogeneous groups; (2) low dogmatism, heterogeneous groups;

TABLE 3

Distribution of Responses (in Percentages) to
Human Relations Problem of
41 Male Students

	Rank				
	1	2	3	4	5
Solution					
A	7.3	14.6	31.7	31.7	14.6
B	2.4	12.2	19.5	22.0	43.9
C	26.8	26.8	26.8	14.6	4.9
D	19.5	34.1	7.3	12.2	26.8
E	43.9	14.6	12.2	19.5	9.8

TABLE 4

Distribution of Responses (in Percentages) to
Human Relations Problem of
21 Female Students

	Rank				
	1	2	3	4	5
Solution					
A	14.3	19.0	23.8	28.6	14.3
B	4.8	19.0	33.3	19.0	23.8
C	28.6	23.8	14.3	23.8	9.5
D	14.3	23.8	9.5	4.8	47.6
E	38.1	14.3	19.0	23.8	4.8

TABLE 5
 Distribution of Responses (in Percentages)
 to Human Relations Problem of
 62 Male and Female Students

	Rank				
	1	2	3	4	5
Solution					
A	9.7	16.1	29.0	30.6	14.5
B	3.2	14.5	24.2	21.0	37.1
C	27.4	25.8	22.6	17.7	6.5
D	17.7	30.6	8.1	9.7	33.9
E	41.9	14.5	14.5	21.0	8.1

(3) medium dogmatism, homogeneous groups; (4) medium dogmatism, heterogeneous groups; (5) high dogmatism, homogeneous groups; and (6) high dogmatism, heterogeneous groups.

The task of the subjects was to rank in order of preference both individually and as a group, various solutions to a human relations problem. The group ranking was determined by majority vote. In the homogeneous groups each subject had one vote, whereas in the heterogeneous groups different subjects had different numbers of votes. Each solution was voted on separately. As regards the heterogeneous groups, the votes were distributed as follows: (1) In groups consisting of three members, Ss, A, B, C, subject A had one vote, subject B had two votes, and subject C had three votes; (2) in groups consisting of four members, Ss, A, B, C, and D, subject A had one vote, subject B had two votes, subject C had three votes, and subject D had four votes; (3) in groups consisting of five members, Ss, A, B, C, D, and E, subject A had one vote, subject B had two votes, subject C had three votes, subject D had four votes, and subject E had five votes.

Heterogeneity of power in this context may be defined as the presence of differences in voting power, and homogeneity of power may be defined as the absence of differences in voting power. The assumption behind this manipulation of voting power is that the more votes a subject is able to cast, the greater is his power.

The number of votes allotted to a particular subject (in a heterogeneous group) was determined by the position in the alphabet of the subject's last name. The closer a subject's last name was to the end of the alphabet, the greater the number of votes which were allotted to him. For example, Adams would cast one vote, Baker two votes, Campbell three votes, Davis four votes, and Edwards five votes. The assumption is that the position of a person's last name in the alphabet is not associated with any particular psychological characteristics. It is apparent that the allocation of votes could have been determined by many other equally good and equally arbitrary methods.

The procedure in all of the groups was practically identical. The only major difference in procedure related to voting instructions. For this reason, the step-by-step chronological procedure which is described here should be assumed to apply to all groups unless otherwise indicated. The procedure was as follows:

1. The experimenter said to the subjects:

For the next 45 minutes you will be participating in an experiment in social psychology which involves a 25 minute group discussion having to do with a human relations problem. I would like, first of all, to give each of you a copy of that problem.

2. The experimenter then distributed copies of the problem and blank sheets of paper to the subjects.

3. The experimenter then said to the subjects:

Print your full name in the upper right-hand corner of the blank sheet. Read the problem and the suggested solutions. Then rank the solutions from best to poorest by writing on the blank sheet the letter of each of the solutions and the rank of that solution so that the number "one" indicates the best solution, the number "two" indicates the second best solution, and so on up to five, which indicates the poorest solution. This ranking requires only the numbers from one to five and the letters A, B, C, D, and E. You have five minutes to read the problem and rank the suggested solutions.

4. After the subjects ranked the solutions, the rankings (initial individual rankings) were collected. The copies of the problem and the suggested solutions were temporarily kept by the subjects so that they might refer to them during the group discussion.

5. The experimenter then said to the subjects:

You are to engage in a 25 minute group discussion concerning the human relations problem and the suggested solutions. During the course of this discussion, you are to produce a group ranking of the solutions. The form of the group ranking will be the same as that of the individual rankings. However, in this case, the group as a whole is to decide the rank of each of the solutions. Because the discussion is limited to 25 minutes, it would be well to spend about five minutes on each of the solutions.

- 6a. At this point, the procedure was slightly different for the two types of groups. The homogeneous groups were told:

The rank of each solution will be determined by majority vote.

- 6b. The heterogeneous groups were told:

The rank of each of the solutions will be determined by majority vote. However, in this experiment, different persons will have different numbers of votes.

The experimenter then told each subject the number of votes he would cast and the number of votes necessary for a decision.

The experimenter then said:

Let me stress that a majority of votes, but not necessarily a majority of voters, is required for a decision.

- 7a. The experimenter then said to the homogeneous subjects:

Cards with letters will be used in this experiment for purposes of identification. Each person will place his card in front of himself. The cards were then distributed to the subjects.

- 7b. The experimenter then said to the heterogeneous subjects:

Cards with letters and the number of votes you will cast will be used in this experiment. The letters are for purposes of identification. Each person will place his card in front of himself.

The cards were then distributed to the subjects.

8. The experimenter then said to the subjects:

I am going to record this discussion so that I will have a record of the interaction which takes place during the discussion.

9. The experimenter then said:

The discussion will now begin.

10. The subjects then engaged in a group discussion, in the course of which a group ranking was produced.

11. While the discussion was in progress, it was being recorded on the tape recorder, and the experimenter was recording the sequence of interaction. Each subject was identified by the letter which he had placed in front of himself. These letters were recorded on a sheet containing numbers from one to 300. Each number represented the number which appeared on the counter of the tape recorder at any given time. The number on the counter changed once every six seconds, and there were enough numbers on the sheet to record the sequence of interaction during each group discussion. Every time a subject spoke, his letter was recorded on the space next to the appropriate number. If the number on the counter changed while he was speaking, his letter was recorded each time the number changed. In this way the experimenter was able to obtain a measure of the amount of verbal communication for each subject.

12. When the group discussion ended, the group ranking was collected.

13. The experimenter then said to the subjects:

I will now pass out a questionnaire which I would like you to respond to. Print your full name in the upper right-hand corner of the first page. Write your letter and the numbers of votes you cast below your name. Answer all the items on the questionnaire, and hand it in when you have finished.

14. Copies of the questionnaire were then passed out to the subjects.

15. The subjects completed the questionnaire and handed them in.

The items on the questionnaire have already been presented. The questionnaire measured the following dependent variables: (1) morale, (2) opinion change, (3) perceived productivity, (4) emergent leadership, (5) power and perceived amount of total (verbal and nonverbal) communication, and (6) power and perceived influence attempts. A seventh dependent variable, distribution of participation, was measured by measuring the amount of verbal communication for each subject, as has already been described, and then by analyzing these measures by statistical methods which will be described in detail in the statistics section. Suffice it to say here that the measurement of the amount of verbal communication for each subject made possible the

determination of the distribution of participation (verbal communication) in each of the groups and thus in each of the treatment combinations.

The heterogeneous subjects were measured on all the dependent variables. The homogeneous subjects were not measured on power and perceived influence attempts or power and perceived amount of total communication, but were measured on all the other dependent variables.

Statistics

It is important to point out that in this study the unit of statistical analysis was the group rather than the subject, as is more commonly the case in psychological research. In this study, as in small group research in general, the object of investigation was the interacting group rather than the individual. The scores of the members of a group were not independent of one another because they were the product of group interaction. However, the scores of members of one group were independent of the scores of members of other groups even if the members of these groups were serving in the same treatment combination. Thus, the number of degrees of freedom was based upon the number of groups rather than upon the number of subjects, and the statistical analysis in general was based upon groups rather than upon subjects because, in this study, a group was considered to be

the equivalent of a subject. (For example, the high dogmatism, heterogeneous power treatment combination was composed of five groups and 21 subjects. In this case $n=5$ rather than 21.) Thus, in every case, the scores of the members of a group were averaged in order to obtain a score for each group on each variable.

Each subject's degree of opinion change was measured by calculating the rank-order correlation coefficient (ρ) between the initial individual ranking and the final individual ranking (item A on the questionnaire) for each subject. The higher the positive correlation between these two rankings, the less opinion change there was. After the ρ s had been computed for each subject, the ρ s of the members of each group were averaged in order to obtain a ρ for each group. A 2 X 3 factorial analysis of variance was then carried out. (Winer, 1962)

The morale items (items B1, B2, B3, B4, B5, B6, and B7) were analyzed separately and in groups in addition to an analysis of the over-all measure of morale. In other words, the dependent variable of morale was broken up, for purposes of analysis, into the seven items comprising it, and also into two groups of three items each. The reason for this was that the experimenter felt that each of these items measured something somewhat different from what was measured by any of the other items. Thus, the experimenter felt that it was necessary to analyze each item

separately as well as analyzing the over-all measure of morale, i.e., all the items combined. Since each of these items measured different aspects of morale, the experimenter believed that it was quite possible for differences on some items and groups of items to be significant, and for the differences on other items and groups of items to be not significant.

The items were categorized into three groups: (1) Item B1, which was a single item, but which, in a sense, constituted a discrete category because it measured an aspect of morale which the other groups of items did not measure, namely "product satisfaction." This item measured satisfaction with the group ranking or, in other words, satisfaction with the product of the task.

(2) Items B2, B3, and B4, which measured "discussion satisfaction, i.e., satisfaction with the group discussion. The combination of these three items will be referred to hereafter as B234. (3) Items B5, B6, and B7 (This combination is referred to hereafter as B567), which measured "task satisfaction," i.e., satisfaction with the task, which involved a discussion of the merits of the solutions, voting, and the production of a group ranking.

As regards the separate analysis of the scores on each of the items measuring morale, the scores of the members of each group were averaged to produce a group average, which as has already been stated, was considered to be the equivalent of the

score of one subject. A 2 X 3 factorial analysis of variance was then carried out for each morale item.

As regards B234, the scores on items B2, B3, and B4 were averaged to produce a single, over-all score for each subject. The over-all scores of the members of each group were averaged to produce a group average for B234, and a 2 X 3 factorial analysis of variance was then carried out. The statistical procedure for B567 was identical to that for B234.

One over-all measure of morale, B-all, was calculated in a similar fashion, i.e., by averaging the scores for each subject on all the morale items. Averaging of subjects' scores was not necessary in the case of item B1, as this involved only one item. As was the case with the other items and groups of items measuring morale, 2 X 3 factorial analyses of variance were carried out for B-all and item B1.

Items C ("emergent leadership") and E ("perceived productivity") were analyzed in a similar fashion. Individual scores were averaged to obtain group scores, and 2 X 3 factorial analyses of variance were carried out.

Items D ("power and perceived amount of total communication") and F ("power and perceived influence attempts") were analyzed in a somewhat different fashion. In the case of these items, each subject received a rating from all the members of the

group (including himself). The first step was to average the ratings of the members of each group for each subject so that each subject received a group rating. The next step was to compute the correlation between amount of power and the group rating for each heterogeneous group. The measure of correlation used was the rank-order correlation coefficient. The amount of power for each subject was, of course, the number of votes he cast. The ratings were ranked in order of magnitude, as was amount of voting power. (In this particular case, the number of votes which each subject cast and his rank on amount of power were identical.) In this way it was possible to obtain a rank-order correlation coefficient between amount of power and the ratings on these two variables for each heterogeneous group. (It was, of course, not possible to obtain such correlations for the homogeneous groups because in these groups all subjects had an equal amount of voting power.) The group rhos were then used to carry out a single-factor analysis of variance for the heterogeneous groups for these two variables. The only factor in this analysis of variance was dogmatism. Heterogeneity of power was not a factor because all the groups included in this analysis of variance were heterogeneous.

In regard to the measure of the distribution of participation, the raw score for each subject on amount of verbal

communication was converted into a percentage of the total amount of verbal communication of his particular group. These percentages were used in computing standard deviations for the distribution of the amount of verbal communication for each group. These standard deviations were then used to carry out a 2 X 3 factorial analysis of variance for the distribution of participation.

After the analyses of variance had been carried out, a number of Newman-Keuls tests were performed in order to ascertain the specific sources of significance in those cases where significant differences were found. (Winer, 1962)

All the tests of significance were two-tailed tests.

CHAPTER IV

Results

Tables 6 and 7 present the treatment means for all the items and variables in this study.

Table 8 presents 2 X 3 factorial analyses of variance for item B1 ("I was satisfied with the group ranking.") and item B2 ("I was satisfied with the group discussion.") The main effects of heterogeneity of power were found to be significant for item B1 ($F = 5.98, p < .05$). Since the mean for the homogeneous subjects ($\bar{X} = 4.99$) is larger than the mean for the heterogeneous subjects ($\bar{X} = 4.43$) for item B1, it may be concluded that the homogeneous subjects demonstrated significantly higher morale on item B1 than the heterogeneous subjects. Or, in other words, the homogeneous subjects were significantly more "satisfied with the group ranking" than were the heterogeneous subjects, i.e. they were significantly higher in "product satisfaction." A Newman-Keuls test was performed in order to ascertain the specific sources of significance. No significant differences were found. None of the other F values for these two items were found to be significant.

Table 9 presents 2 X 3 factorial analyses of variance for item B3 ("The group discussion could be described as friendly.") and item B4 ("The group discussion could be described as hostile

TABLE 6

Treatment Means for Measures of Dependent Variables:

A, B1, B2, B3, B4, B5, B6, and B7

Treatments	<u>N</u>	A	B1	B2	B3	B4	B5	B6	B7
<u>Heterogeneous</u>									
High Dogmatism	5	.717	4.62	4.92	5.00	5.24	5.28	4.76	4.98
Medium Dogmatism	5	.523	4.35	4.25	4.76	5.08	4.92	4.76	4.52
Low Dogmatism	5	.766	4.32	4.90	5.15	4.68	5.40	5.17	4.93
<u>Homogeneous</u>									
High Dogmatism	5	.467	5.21	4.44	4.94	5.18	4.28	4.37	4.33
Medium Dogmatism	5	.587	4.97	4.45	4.92	5.28	4.64	4.07	4.43
Low Dogmatism	5	.714	4.81	5.10	5.11	4.73	3.80	4.29	4.42

TABLE 7

Treatment Means for Measures of Dependent Variables:

B234, B567, B-all, C, D, E, F, and DP

Treatments	<u>N</u>	B234	B567	B-all	C	D	E	F	DP
<u>Heterogeneous</u>									
High Dogmatism	5	5.05	5.01	4.97	.624	-.335	3.88	-.035	12.31
Medium Dogmatism	5	4.70	4.73	4.66	.520	+.155	3.74	+.100	10.68
Low Dogmatism	5	4.91	5.17	4.94	.434	+.040	4.00	+.175	13.20
<u>Homogeneous</u>									
High Dogmatism	5	4.85	4.33	4.68	.540		4.06		11.44
Medium Dogmatism	5	4.88	4.38	4.68	.492		3.60		12.26
Low Dogmatism	5	4.98	4.17	4.61	.272		3.87		9.74

TABLE 8

Summary Table: 2 X 3 Factorial Analyses of Variance-Items B1
 (Satisfaction with Group Ranking) and B2
 (Satisfaction with Group Discussion)

Source	<u>df</u>	B1		B2	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	2.39	5.98*	0	0
B (dogmatism)	2	.32	.80	1.05	2.14
A X B	2	0	0	.38	.78
Within Cell	24	.40		.49	
Total	29				

*p < .05

**p < .01

TABLE 9

Summary Table: 2 X 3 Factorial Analyses of Variance-
Items B3 (Friendliness of Group Discussion) and B4
Hostility and Antagonism in Group Discussion)

Source	<u>df</u>	B3		B4	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	0	0	0	0
B (dogmatism)	2	.20	.25	.80	.72
A X B	2	.05	.06	.05	.04
Within Cell	24	.80		1.11	
Total	29				

*p < .05

**p < .01

and antagonistic.") None of the F values for these two items were found to be significant.

Table 10 presents 2 X 3 factorial analyses of variance for item B5 ("The task bored me.") and item B6 ("The task was enjoyable for me.") The main effect of heterogeneity of power were found to be significant for item B5 ($F = 9.96, p < .01$) and item B6 ($F = 14.76, p < .01$). Since the mean for the heterogeneous subjects ($\bar{X} = 5.20$) is larger than the mean for the homogeneous subjects ($\bar{X} = 4.24$) for item B5, it may be concluded that the heterogeneous subjects demonstrated significantly higher morale on item B5 than the homogeneous subjects. Or, in other words, the heterogeneous subjects were significantly less "bored by the task" than were the homogeneous subjects. A Newman-Keuls test revealed that the difference of 1.60 between the means of 3.80 and 5.40 for the low dogmatism, homogeneous groups and the low dogmatism, heterogeneous groups, respectively, was significant beyond the .01 level ($S_{\bar{X}}^2 .99 [2,24] = 1.47$).

It has already been stated that the main effects of heterogeneity of power were found to be significant for item B6. Since the mean for the heterogeneous subjects ($\bar{X} = 4.90$) is larger than the mean for the homogeneous subjects ($\bar{X} = 4.24$) for item B6, it may be concluded that the heterogeneous subjects demonstrated significantly higher morale on item B6 than the homogeneous subjects. Or, in other words, the heterogeneous subjects found the

TABLE 10

Summary Table: 2 X 3 Factorial Analyses of Variance-
 Items B5 (Boredom with Task)
 and B6 (Enjoyment of Task)

Source	<u>df</u>	B5		B6	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	6.88	9.96**	3.10	14.76**
B (Dogmatism)	2	.10	.14	.25	1.19
A X B	2	1.12	1.62	.20	.95
Within Cell	24	.69		.21	
Total	29				

*p < .05

**p < .01

task significantly more "enjoyable" than did the homogeneous subjects. A Newman-Keuls test revealed that the difference of .88 between the means of 5.17 and 4.29 for the low dogmatism, heterogeneous groups and the low dogmatism, homogeneous groups, respectively, was significant beyond the .01 level ($S_{\bar{x}} q_{.99} [2,24] = .81$) and also that the difference of .69 between the means of 4.76 and 4.07 for the medium dogmatism, heterogeneous groups and the medium dogmatism, homogeneous groups, respectively, was significant beyond the .05 level ($S_{\bar{x}} q_{.99} [2,24] = .61$). None of the other F values for items B5 and B6 reached significance.

Table 11 presents 2 X 3 factorial analyses of variance for item B7 ("The task was meaningless insofar as I was concerned.") and B234, which measured "discussion satisfaction." None of the F values for item B7 and B234 reached significance.

Table 12 presents 2 X 3 factorial analyses of variance for B-all, the overall measure of morale, and B567, the measure of "task satisfaction." The main effects of heterogeneity of power were found to be significant for B567 ($F = 8.41, p < .01$). Since the mean for the heterogeneous subjects ($\bar{X} = 4.97$) is larger than the mean for the homogeneous subjects ($\bar{X} = 4.29$) for B567, it may be concluded that the heterogeneous subjects demonstrated significantly higher morale with respect to B567 than the homogeneous subject. Or, in other words the heterogeneous subjects were

TABLE 11

Summary Table: 2 X 3 Factorial Analyses of Variance:

Item B7 (Meaninglessness of Task)
and B234 (Discussion Satisfaction)

Source	<u>df</u>	B7		B234	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	1.30	2.24	0	0
B (dogmatism)	2	.12	.21	.08	.26
A X B	2	.20	.34	.08	.26
Within Cell	24	.58		.31	
Total	29				

*p < .05

**p < .01

TABLE 12

Summary Table: 2 X 3 Factorial Analyses of Variance-
 B567 (Task Satisfaction) and B-all
 (Overall Measure of Morale)

Source	<u>df</u>	B567		B-all	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	3.45	8.41**	.25	1.39
B (dogmatism)	2	.08	.20	.05	.28
A X B	2	.22	.54	.10	.56
Within Cell	24	.41		.18	
Total	29				

*p < .05
 **p < .01

significantly higher than the homogeneous subjects in "task satisfaction." A Newman-Keuls test revealed that the difference of 1.00 between the means of 5.17 and 4.17 for the low dogmatism, heterogeneous groups and the low dogmatism, homogeneous groups, respectively, was significant beyond the .05 level ($S_{\frac{q}{x}} .99 [2,24] = .84$). None of the other F values for B-all and B567 reached significance.

Table 13 presents 2 X 3 factorial analyses of variance for item C ("emergent leadership") and item A ("opinion change"). None of the F values for these two variables reached significance.

Table 14 presents 2 X 3 factorial analyses of variance for item E ("perceived productivity") and DP ("distribution of participation"). None of the F values for these two variables reached significance.

Table 15 presents single-factor analyses of variance (for the heterogeneous groups) for item D ("power and perceived amount of total communication) and item F ("power and perceived influence attempts"). Neither of the F values for these two variables reached significance.

TABLE 13

Summary Table: 2 X 3 Factorial Analyses of Variance-
 Items C (Emergent Leadership)
 and A (Opinion Change)

Source	<u>df</u>	C		A	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	.045	.405	.100	2.50
B (dogmatism)	2	.125	1.126	.075	1.875
A X B	2	.020	.180	.075	1.875
Within Cell	24	.111		.040	
Total	29				

*p < .05
 **p < .01

TABLE 14

Summary Table: 2 X 3 Factorial Analyses of Variance-
 Item E (Perceived Productivity) and DP
 (Distribution of Participation)

Source	<u>df</u>	E		DP	
		<u>MS</u>	<u>F</u>	<u>MS</u>	<u>F</u>
A (heterogeneity)	1	0	0	6.53	.41
B (dogmatism)	2	.28	1.75	.30	.02
A X B	2	.08	.50	18.37	1.17
Within Cell	24	.16		15.75	
Total	29				

*p < .05
 **p < .01

TABLE 15

Summary Table: Single-factor Analyses of Variance for the
 Heterogeneous Groups--Items D (Power and Perceived Amount
 of Total Communication) and F
 (Power and Perceived Influence Attempts)

Source	<u>df</u>	<u>MS</u>	D <u>F</u>	<u>MS</u>	F <u>F</u>
Dogmatism	2	.328	1.15	.064	.274
Exp. error	12	.286		.234	
Total	14				

*p < .05

**p < .01

CHAPTER V

Discussion

It would now be well to consider the results of this study in relation to the hypotheses which have been formulated.

The first hypothesis was as follows: The greater an individual's dogmatism, the greater is his resistance to opinion change. This hypothesis is supported by Rokeach and Vidulich (1960), Miller (1962), and Costin (1968). The results of this study failed to support this hypothesis.

The second hypothesis was as follows: The greater the dogmatism of the members of small groups, the greater is the incidence of emergent leadership in those groups. This hypothesis is supported (indirectly) by Zagana and Zucher (1964). The results of this study failed to support this hypothesis. This is a hypothesis which this writer was probably not justified in making. It is supported by only one of the studies which have been reviewed, and then only indirectly. (This was the only study reviewed which dealt with this question either directly or indirectly.) This hypothesis was based on theoretical considerations rather than on empirical findings. However, even on theoretical grounds, the hypothesis is not too sound. This writer held that the Dogmatism Scale is basically a measure of

authoritarianism, and authoritarian persons tend to be leader-oriented. This writer still adheres to this view. However, a further assumption was made, namely that leaders will emerge in highly dogmatic groups in response to the members' need for such leadership. This assumption is now seen to be highly questionable because the mere need for leadership in no way insures that leadership will emerge, particularly in view of the fact that the group discussions lasted only about 25 minutes, and leadership often takes considerable time to develop and manifest itself.

The third hypothesis was as follows: Morale is higher in homogeneous groups than in heterogeneous groups. This hypothesis is directly supported by Exline and Ziller (1959) and Carter and Haythorn (1956), and indirectly supported by Gestinger and Thibaut (1951) and Gerard (1953). The results of this study failed to support this hypothesis.

It is interesting to note the results which bear on this hypothesis, for they give a good picture of the results of this study, for the only significant differences in this study were with respect to the measures of morale. No significant differences were found with respect to any of the other dependent variables. There were no significant differences as regards the overall measure of morale (B-all), and for this reason, the significant differences in morale which were found must be

interpreted with extreme caution and cannot be given a great deal of weight. It should also be noted that all the significant differences in morale (and therefore in the study as a whole) were between the two levels of heterogeneity; there were no significant differences between the three levels of dogmatism as regards either morale or any other dependent variable. Three of the four significant differences were in the direction opposite to that hypothesized, i.e., heterogeneous subjects demonstrated significantly higher morale than homogeneous subjects in three of the four cases of significant differences (items B5 [$p < .01$], B6 [$p < .01$], and B567 [$p < .01$]). In only one of the four cases of significant differences were the homogeneous subjects significantly higher in morale (item B1 [$p < .05$]).

In order to properly interpret the results of this study in regard to the dogmatism variable, and also to gain an understanding of the reasons for the failure to confirm the two hypotheses concerning dogmatism, it is necessary to consider the limitations of this study as they pertain to the dogmatism variable. Particular attention will be given in this discussion to the limitations and imperfections of the Dogmatism Scale.

In the present study, the comparison was between those who scored in the upper third, those who scored in the middle third, and those who scored in the lower third on the Dogmatism Scale.

Perhaps the failure to confirm the hypotheses concerning dogmatism was the result, at least in part, of the selection of groups that did not differ sufficiently as regards their scores on the Dogmatism Scale, i.e., there may not have been sufficient contrast between the three dogmatism groups. If subjects had been selected only from those persons whose scores were at the extremes of the distribution of scores, there would perhaps have been sufficient contrast between the three levels of dogmatism to "bring out" the expected relationships.

It should be emphasized that reliance on the extremes of the distribution in no way implies that the relationships between dogmatism in a "pure" and objective sense and various hypothetical dependent variables are necessarily so tenuous that they can be "brought out" only in this manner. Rather, it is held that the relationships between Dogmatism, as measured by the Dogmatism Scale, and various hypothetical dependent variables, are frequently very tenuous because of the imperfections of the Scale, and that if the Scale did not suffer from these imperfections there would probably be no need to use the extremes of the distribution.

A number of studies of dogmatism have, in fact, used only the extremes of the distribution. Only two examples will be given, but there are many other similar cases. Zagona and Zucher

(1964), in their study of dogmatism in relation to interaction and role behavior, used two experimental groups of 30 each from both ends of a distribution of 517 Dogmatism Scale scores. In a study by Rokeach and Vidulich (1960) of dogmatism in relation to problem solving, the 30 highest scorers and the 30 lowest scorers on the Dogmatism Scale were selected from a pool of 249 students.

The limitation which has just been discussed relates to the empirical testing of the hypotheses. The limitations which will now be discussed relate to the interpretation of the results. These limitations have to do with the imperfections of the Dogmatism Scale. Since the hypotheses in this study were based upon studies which also used the Dogmatism Scale, the imperfections of the Dogmatism Scale cannot logically be used to explain the failure to confirm the hypotheses. However, because the validity of the Dogmatism Scale is less than ideal, the interpretation of the results in any study which makes use of it are made somewhat difficult. It would therefore be well to critically examine the Dogmatism Scale in order to determine the limitations with respect to the interpretation of results.

One of the most serious and most obvious methodological defects of the Dogmatism Scale is that all the statements on the Scale are of a dogmatic nature, so that all "agreement responses"

indicate dogmatism, and all "disagreement responses" indicate non-dogmatism. Persons who have a tendency to agree with statements will therefore tend to have high dogmatism scores, and persons who have a tendency to disagree with statements will tend to have low dogmatism scores. In this way, tendencies to agree or disagree are confounded with the measure of dogmatism. The solution would be to have an equal number of dogmatic and non-dogmatic statements mixed together in a random fashion.

The Dogmatism Scale has been criticized by a number of writers on the grounds that its statements tend to be regarded as socially or personally undesirable by many persons, so that many persons with a strong need for social and/or personal desirability tend to disagree with these statements, thus obtaining low dogmatism scores without necessarily being low in dogmatism (in an objective sense). In this way, according to these writers, the need for social and personal desirability is confounded with the measure of dogmatism.

Two studies which dealt with this question and related issues will, perhaps, shed some light on this subject. A study by Becker and Dileo (1967) investigated the relationship between scores on Rokeach's Dogmatism Scale and the response set to present a positive social and personal image. The authors pointed out that previous research has suggested that low scorers on the

Dogmatism Scale, which is positively keyed, obtain low scores because they tend to repress or deny statements that are socially undesirable or reflect a negative self-image. In this study, 216 undergraduate students were administered the Marlowe-Crowne Social Desirability Scale (social image) and the Worchel Self Activity Inventory (personal image) as well as Rokeach's Dogmatism Scale. Results indicated that: (1) Low scorers on the Dogmatism Scale are not motivated differentially to present a positive social image, but are motivated differentially to present a positive personal image and in the direction expected; and (2) Males are more motivated to present a positive personal image than are females, and females are more motivated to present a positive social image than are males.

Becker (1967), in a study of ability to differentiate message from source in relation to amount of dogmatism, found that subjects who had been classified as either low or high in dogmatism on the basis of their scores on the Dogmatism Scale depended relatively less on content and more on source than did those classified as medium. The author concluded that because of response set tendencies, the Dogmatism Scale is not a valid rectilinear predictor of closed-mindedness and correlates of closed-mindedness.

A number of studies have, however, found the Dogmatism Scale to be a generally valid instrument. Two of these studies will be presented in order to indicate the nature of these investigations and their findings.

Costin (1968), in a study of dogmatism and the retention of psychological misconceptions, concluded that the results of his study support Rokeach's view that the Dogmatism Scale does measure general authoritarianism, rather than simple-mindedness and its consequent acquiescence.

Plant (1960) conducted a study of the Dogmatism Scale as a measure of general authoritarianism, which involved a replication of an earlier study by Rokeach. In this study, the Dogmatism Scale, the Ethnocentrism Scale, and the California F Scale were administered to a number of college students. The rs for this study and the earlier one by Rokeach were similar, supporting Rokeach's contention, according to the author, that the Dogmatism Scale is less loaded with prejudice and is a better measure of authoritarianism than the F Scale.

The evidence from these studies, which may be considered to be fairly representative, and from other studies of a similar nature indicates that the Dogmatism Scale is a fairly valid instrument, although it suffers from the methodological defects which have been described. Because of these methodological

defects, the interpretation of results is made rather difficult. In the case of negative findings, as in the present study, it can be concluded that the evidence indicates that the hypothesized relationships between dogmatism, as measured by the Dogmatism Scale, and the specified dependent variables probably do not exist. However, the failure of the present study to use only the extremes of the distribution of the Dogmatism Scale scores makes even this rather modest conclusion somewhat doubtful. In no event, however, can it be concluded that this study has found strong evidence that the specified relationships between dogmatism as such, i.e., dogmatism in a pure and objective sense, and the dependent variables in question do not exist. However, because the Dogmatism Scale does possess fairly high validity, it can be said that this study does cast doubt upon the existence of these relationships or, at the very least, casts doubt upon the strength of these relationships, even when one considers the limitations of this study in regard to the empirical testing of the hypotheses. Because of the qualified and tentative nature of this statement, it cannot be regarded as having the status of a conclusion. However, experimenters in this area must await further refinements in the Dogmatism Scale before substantially stronger and more positive statements can be made.

It would now be well to consider the limitations of this study with regard to the heterogeneity of power variable.

In this study, the groups were not of equal size, each group consisting of three, four, or five members. This inequality of group size did not violate the basic design of this study, nor did it violate any of its basic assumptions. However, this inequality may be regarded as undesirable and far from ideal. As regards the heterogeneity of power variable, this study was concerned with an absolute type of comparison, i.e., a comparison between complete heterogeneity, in which no two persons had the same amount of voting power, and complete homogeneity, in which everyone had the same amount of voting power. The study as it was actually conducted was able to adhere to this intended purpose. Because of this concern with an absolute type of comparison, the inequality of group size did not prevent the proper and appropriate empirical testing of the hypotheses. However, there was a more subtle difficulty with regard to group size. The use of groups of different sizes led to differences in the distribution of power, so that the power relationships in the three-man groups were different from those in the four-man groups, and both were different in this regard from the five-man groups. Thus, there was a lack of uniformity as regards the distribution of power, although it is difficult to determine how much, if at all,

this affected the results. The lack of uniformity of group size in itself constituted a possible source of error which could have affected the dogmatism factor as much as the heterogeneity factor.

Securing groups of equal size is a problem in any case where time and the number of subjects are relatively limited and where the experimenter does not have full control over the number of subjects who sign up for a given experimental session and who actually report to the experimental room for that given experiment session. This was the case in the present study, and is the case in many other studies of small group behavior. Uniformity of group size is desirable, but the problem of obtaining it is not an easy one to solve.

Another of the possible limitations of this study is the possibility that the subjects were insufficiently impressed by the power differences. In a study of this type, the mere presence of differences in power is not enough; the subjects must also perceive these differences. The manipulation of voting power may not have been enough to induce perceptions in the subjects of power differences of sufficient magnitude. In other words, the heterogeneous groups may have perceived themselves as being relatively homogeneous. The experimentally created power differences, as perceived by the subjects, may have been of such small magnitude that they were obscured by other factors, e.g.,

personality factors. For example, a subject with low voting power might have possessed a commanding and dominating personality, which would have given him a high degree of interpersonal power, and a subject with high voting power might have possessed a very submissive personality, which would have limited him to a very low degree of interpersonal power. In such a way, natural power differences or natural sources of power differences might have had the effect of cancelling out or neutralizing artificially established power differences, if the latter were not of sufficient strength, as might have been the case in the present study.

This brings up the whole question of artificially created heterogeneity vs. natural heterogeneity, the type of heterogeneity which is found outside the psychological laboratory, but which may be studied either outside or within the laboratory. Among the studies already reviewed, the following studies concerned themselves exclusively with natural heterogeneity: Haythorn et al. (1956), Hoffman (1959), Schutz (1958), Cattell, Saunders, and Stice (1953), and Carter and Haythorn (1956). A number of types of heterogeneity must be natural heterogeneity, e.g., heterogeneity of personality, values, interests, and attitudes. This writer has already stated that he believes that artificially (experimentally) created heterogeneity corresponds to and is

similar to naturally occurring types of heterogeneity, and there is empirical support for this belief. While this writer continues to adhere to this belief, it must be pointed out that there are a number of advantages to using natural heterogeneity, or, to put it the other way around, there are a number of disadvantages in using artificially created heterogeneity, which may account, in whole or in part, for the lack of significant differences in regard to the heterogeneity of power variable.

There has been some criticism of small group research in general to the effect that there has been too much emphasis on artificial groups in artificial settings working on artificial tasks, and that insufficient attention has been given to natural groups in natural settings working on natural tasks. The present discussion deals with only one part of this larger question. It would be quite possible for the heterogeneity to be natural, but for the groups, the setting, and the task to be artificial. Natural vs. artificial heterogeneity is only one aspect of the larger question of the natural vs. the artificial in small group research. However, the larger question has been raised in order to make the smaller question more meaningful by giving it proper perspective and by indicating its relationship to a larger area. There are, of course, implications here for future studies in the area of small group research. The shortcomings of artificially

created heterogeneity are similar to the shortcomings of other artificial features of small group research. The solution is greater emphasis on the natural, without abandoning the study of artificial groups under artificial conditions. The latter type of study often has the advantage of greater convenience and feasibility, and the results of most such studies are, in all probability, fairly sound, despite their obvious limitations.

If natural heterogeneity of power had been used, the subjects might have been considerably more impressed with the power differences, largely because of their greater realism. Another point that must be stressed is that natural heterogeneity is generally of far longer duration than artificially created heterogeneity. In this study, the artificially created heterogeneity existed only for the duration of the group discussion, in most cases about 25 minutes. It is reasonable to assume that natural heterogeneity has a far greater impact on people than does artificial heterogeneity because of its permanent or relatively permanent nature, as contrasted with the brief and transitory nature of artificial heterogeneity. Because of its greater realism and longer duration, natural heterogeneity is likely, in most cases, to have a more profound influence upon subjects' behavior than artificial heterogeneity. In addition, natural heterogeneity does not run the risk of artificial heterogeneity,

namely that artificial differences with respect to a particular characteristic may be neutralized or obscured by the presence of natural differences, as may have been the case in the present study.

Because of the limitations of this study with regard to the heterogeneity variable, it cannot be concluded that strong evidence has been found against the hypothesis that morale is higher in homogeneous groups than in heterogeneous groups, but the validity of this hypothesis can be said to be somewhat doubtful on the basis of the negative findings in regard to it. For the same reason, the lack of significant differences with regard to the other dependent variables does not constitute strong evidence against the existence of any of the relationships which this study sought to discover, but does cast a measure of doubt upon their existence.

CHAPTER VI

Summary

The purpose of this study was to determine the relationship between dogmatism and heterogeneity of power (the independent variables) and the following dependent variables: (1) morale (or satisfaction), (2) emergent leadership, (3) opinion change, (4) perceived productivity, (5) distribution of participation, (6) power and perceived amount of total communication, and (7) power and perceived influence attempts. These variables were studied in small groups consisting of three to five members.

The hypotheses which were formulated were as follows:

(1) The greater an individual's dogmatism, the greater is his resistance to opinion change.

(2) The greater the dogmatism of the members of small groups, the greater is the incidence of emergent leadership in those groups.

(3) Morale is higher in homogeneous groups than in heterogeneous groups.

The results of this study failed to support these hypotheses. The only significant differences in this study were between the homogeneous and heterogeneous groups on some of the measures of morale. Three of the four significant differences

were in the direction opposite to that hypothesized, and there were no significant differences in regard to the overall measure of morale.

A number of the limitations of this study were discussed, and it was concluded that because of that because of these limitations, strong evidence had not been found against the existence of the hypothesized relationships and the other relationships which this study sought to discover. However, it was concluded that the results of this study did cast some doubt upon the existence, or at least the strength, of these relationships.

APPENDIX

The Dogmatism Scale

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others. Whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one. Write +1, +2, +3 or -1, -2, -3, depending on how you feel in each case.

+1: I AGREE A LITTLE
+2: I AGREE ON THE WHOLE
+3: I AGREE VERY MUCH

-1: I DISAGREE A LITTLE
-2: I DISAGREE ON THE WHOLE
-3: I DISAGREE VERY MUCH

- ___ 1. The United States and Russia have just about nothing in common.
- ___ 2. The highest form of government is a democracy, and the highest form of democracy is the government run by those who are most intelligent.
- ___ 3. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.
- ___ 4. It is only natural that a person would have a much better acquaintance with ideas he believes in than with ideas he opposes.
- ___ 5. Man on his own is a helpless and miserable creature.
- ___ 6. Fundamentally, the world we live in is a pretty lonesome place.
- ___ 7. Most people just don't give a damn for others.
- ___ 8. I would like it if I could find someone who would tell me how to solve my personal problems.
- ___ 9. It is only natural for a person to be rather fearful of the future.
- ___ 10. There is much to be done and so little time to do it in.

- 11. Once I get wound up in a heated discussion, I just can't stop.
- 12. In a discussion I often find it necessary to repeat myself to make sure I am being understood.
- 13. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.
- 14. It is better to be a dead hero than to be a live coward.
- 15. While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein, or Beethoven, or Shakespeare.
- 16. The main thing in life is for a person to want to do something important.
- 17. If given a chance, I would do something of great benefit to the world.
- 18. In the history of mankind there have been probably just a handful of really great thinkers.
- 19. There are a number of people I have come to hate because of the things they stand for.
- 20. A man who does not believe in some great cause has not really lived.
- 21. It's only when a person devotes himself to an ideal or cause that life becomes meaningful.
- 22. Of all the different philosophies which exist in this world, there is probably only one which is correct.
- 23. A person who gets enthusiastic about too many causes is likely to be a pretty "wishy-washy" sort of person.
- 24. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.
- 25. When it comes to differences of opinion in religion, we must be careful not to compromise with those who believe differently from the way we do.
- 26. In times like these, a person must be pretty selfish if he considers primarily his own happiness.
- 27. The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.
- 28. In times like these, it is often necessary to be more on guard against ideas put out by people or groups in one's own camp than by those in the opposing camp.
- 29. A group which tolerates too much difference of opinion among its own members cannot exist for long.
- 30. There are two kinds of people in this world: Those who are for the truth, and those who are against the truth.
- 31. My blood boils whenever a person stubbornly refuses to admit he is wrong.

- 32. A person who thinks primarily of his own happiness is beneath contempt.
- 33. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.
- 34. In this complicated world of ours, the only way we can know what is going on is to rely on leaders or experts who can be trusted.
- 35. It is often desirable to reserve judgment about what is going on until one has had a chance to hear the opinions of those one respects.
- 36. In the long run, the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.
- 37. The present is all too often full of unhappiness. It is only the future that counts.
- 38. If a man is to accomplish his mission in life, it is sometimes necessary to gamble "all or nothing at all."
- 39. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.
- 40. Most people just don't know what's good for them.

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APPROVAL SHEET

The dissertation submitted by Joel Robert Kaplan has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

November 3, 1969

Date

Harold H. Johnson

Signature of Advisor